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September 9, 1992

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

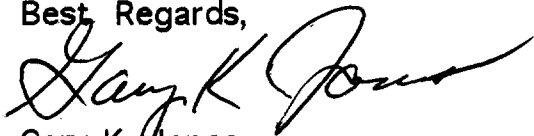
Donna R. Searcy, Secretary  
Federal Communications Commission  
1919 M Street, N.W.  
Room 222, Mail Stop 1170  
Washington, D.C. 20554

Re: Ex Parte report. CC Dosket No. 90-314. ET Docket No. 92-100

Dear Ms. Searcy:

This will notify the Commission of an ex parte presentation yesterday by PCN America, Inc. and Rockwell International in the above referenced proceeding. Messrs Gary K. Jones and Tom Jones discussed the attached material with Messrs Robert Pepper, David Reed, John Williams and Evan Kwerel of the Commission staff.

Best Regards,



Gary K. Jones  
Director of Business Development  
PCN America, Inc.

Enclosure

cc: Mr. Robert Pepper  
Mr. David Reed  
Mr. John Williams  
Mr. Evan Kwerel

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**Presentation**

**to the**

**Federal Communications Commission**

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# **NPRM 90-314 92-100**

- 
- **Focus on moving microwave users**
    - **emphasis on negotiations**
    - **high power levels allowed**
    - **interference criteria: TSB10-E**
  - **Sharing is not considered - Why not?**

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## **Sharing with Microwave Still the "Best Idea"**

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- **Immediate PCS deployment**
- **Public Safety grandfathered**
- **Avoids long litigation**
- **Fully utilizes frequencies**
- **Applicable in MOST cases**

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# **Sharing with Microwave A Millicom Concept in 1989**

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- **Interference Management**
  - **Overlay using spread spectrum**
  - **Avoidance with patterned antennas**
- **Signal Cancellation**
  - **Combat interference at microwave**

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# Interference Management

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- Spread spectrum and CDMA
- Computer modeling of interference - Comsearch
- Cell placement and splitting
- Patterned antennas
- *Notch filters are not applicable with the block allocations and power levels proposed in the NPRM*

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# **Signal Cancelling Technology**

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- **Located on Microwave front end**
- **Detects "foreign" signals**
- **Cancels "foreign" signals before receiver**
- **Source - US electronic warfare**

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## **New Technology - Why Now?**

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- **High speed Digital Signal Processing (DSP) chips**
- **High speed computers**
- **Powerful computer software**
- **Ability to "footprint" signals**
  - **Applicable for CDMA and TDMA**
  - **both technologies are being explored**



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## **Challenges**

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- **Economics**
  - **Can equipment be built cost effectively?**
- **Politics**
  - **Does the Congress and the FCC want sharing with microwave?**

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## **Next Steps**

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- **Involve major equipment manufacturers**
  - **Rockwell International**
  - **TeleSciences**
- **Prepare live demonstration**
  - **September**
- **Ask the FCC about sharing**

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# **Millicom U.K. Network and Local Loop Competition**

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- **License Application: December 1991**
- **License Awarded: August 11, 1992**

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# **Millicom U.K. Spectrum Sharing**

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- **Technology**
  - **Broadband Direct Sequence MDMA**
  - **combination of CDMA/TDMA**
- **Existing Spectrum Users**
  - **licensed fixed microwave**
  - **licensed satellite downlink**

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## **U.K. Telecom Policy Objectives**

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- **Promote Competition to British Telecom**
- **Dramatic improvement in price/performance characteristics**
  - lower build costs
  - computing versus telecommunications
- **Share Spectrum**
  - rapidly introduce new technology
  - efficiently utilize spectrum

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## **U.K. Bandwidth Allocation**

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- **Two 84 MHz bands**
- **Carrier frequencies adjustable over 500 MHz**
- **Spectral range 3.7 - 4.2 GHz**
- **Adequate spectrum to offer:**
  - **Voice, data and video services at speeds approaching coaxial cable**

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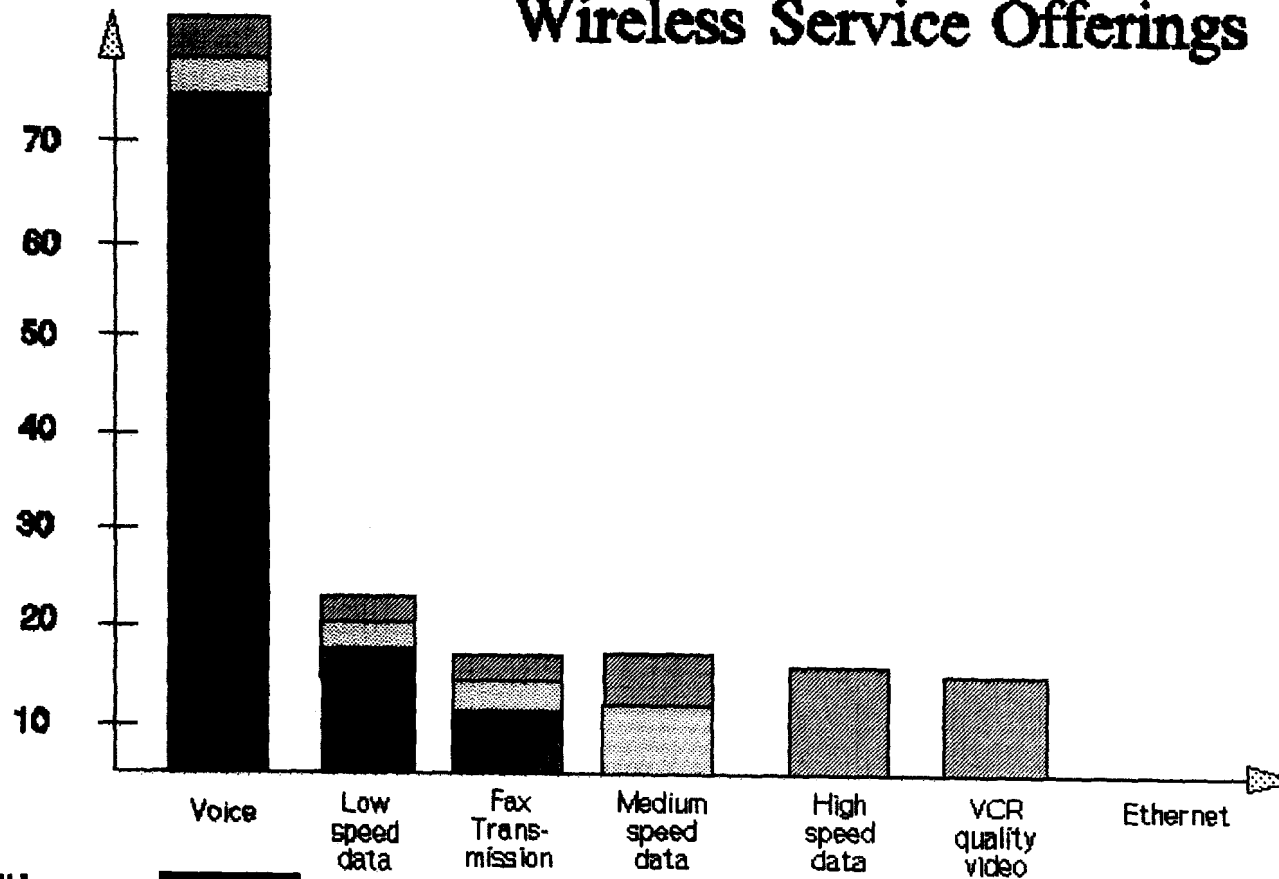
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## Service Mix



# Wireless Service Offerings

Number  
of  
Users



Service Mix

Cellular - 25 MHz

PCS US - 30 MHz

PCS UK - 50 MHz

Broadband - 160 MHz



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# **Millicom U.K. U.S. Policy Implications**

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- U.S. PCS docket is already 3 to 5 years behind the U.K.
- U.K. Broadband license award and U.S. PCS frequency limitation threaten to increase the U.K. technology lead
  - Will U.S. manufacturers participate in leading technology development?
  - Will U.S. consumers benefit from dramatic improvements available with existing technology in price/performance characteristics of telecommunications?
- When will U.S. consumers see large scale network and local loop competition?

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# **NPRM Proposes to Eliminate Wideband (40 MHz) CDMA**

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- **Frequency division for licensed PCS  
(15 MHz in each direction)**
  - compatible with microwave channelization
  - comparable to cellular
  - designed to aid microwave relocation
- **Channelization for non-licensed PCS**
- **Implication - network and local loop  
competition delayed**

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## **Limiting Bandwidth Also Limits the "Best Options" of CDMA**

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- **Easy technology for "Signal Cancelling"**
- **Less microwave relocation needed**
- **Higher capacities than other technologies**
- **Higher data rates than other technologies**
  - **Wideband CDMA has shown to be the only technology to have throughput data rates comparable to Landline**

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# **Wideband CDMA Meets Requirements**

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- **The only technology to:**
  - **deliver PCS services required by industry user consensus**
  - **have voice quality comparable to Landline**
  - **transmit both voice and data without requiring dedicated channels**
  - **easily migrate from large to micro cell implementation**

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## **Frequency Allocation Answer Licensed PCS**

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- **Block A (1850-1870/1930-1950 MHz) allocated**
- **Block B (1870-1890/1950-1970 MHz) allocated**
- **Block C (1890-1920/1970-1990 MHz) held in reserve**

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## **Benefits of New Allocation**

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- **Either TDMA and CDMA can be accommodated**
  - **services and capabilities associated with CDMA will not be precluded**
- **CDMA data rates will provide easy telecommuting**
- **An allocation is reserved for expansion or additional licenses (If more than two licenses per market are shown to make economic and competitive sense)**
- **Comparable to UK PCS service offering licensed 3 years ago**

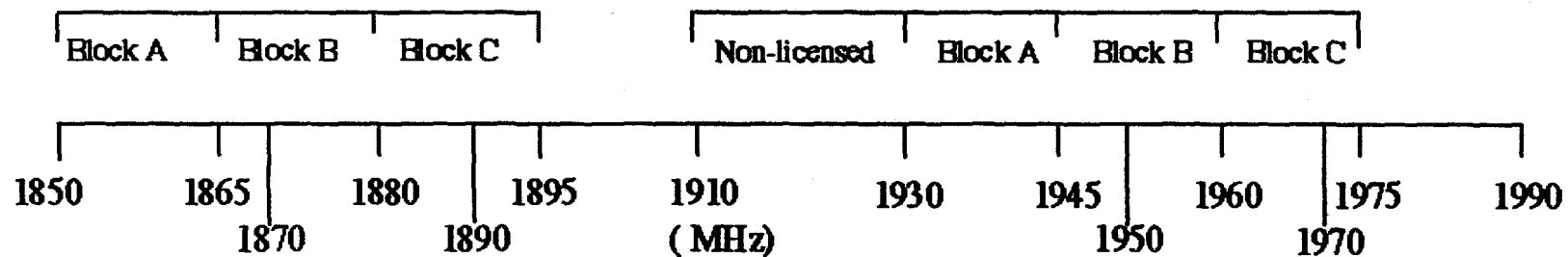
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## Proposed Block Allocations

### NPRM Proposed Allocations



### PCN America Proposed Allocations

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